

MASAMI KAMEDA
Application No. 10/784,111
Amendment under 37 CFR 1.116 Expedited Procedure
Examining Group 2142

PATENT

AMENDMENTS TO THE DRAWINGS

The replacement drawing sheet attached as Appendix A includes changes to Figure 3. .

Attachment: Replacement Sheet

REMARKS

This paper is responsive to the Final Office Action dated September 14, 2007. Claims 1, 3-8, 10-14, and 16 are currently pending in the above-identified application. Claims 1, 6, 10 and 16 have been amended. Support for the amended claims can be found in the specification. The specification and the drawings have also been amended. No new matter has been added by these amendments. Reconsideration of the claims in view of the amendments and the following remarks is respectfully requested.

Examiner Interview

Applicant thanks the Examiner for his time on November 19, 2007 to discuss the objections and rejections.

Objection to the Specification

The Office Action objected to the specification as failing to provide proper antecedent basis for the claimed subject matter. Specifically, the Office Action states that the following claim features lack antecedent basis: "in response to information that identifies a particular block from said first controller via the SAN" and "wherein the SAN couples the first controller and the second controller to establish a... path for the transfer using the file transfer protocol with the LAN." Applicant respectfully disagrees.

Support for all of the claimed elements can be found in Fig. 1-3. Referring to Fig. 3, reference number 306 shows the SAN. Nevertheless, the specification has been amended to explicitly describe the function of the SAN. For example, page 14 of the specification has been amended to recite "The file is read from a volume 312 via a disk controller 311 of a storage system 310 and is sent to a network LAN 301 via a SAN 306 and network interfaces 302 and 303." Thus, the objection to the specification is overcome.

Claim Rejections Under 35 U.S.C. §112

The Office Action rejected claims 1, 3-8, 10-14, and 16 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The Office Action states that the claims contain subject matter which was not described in the specification in such

a way as to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, the Office Action states that the limitation in claim 1 "in response to information that identifies a particular block from said controller via the SAN" is not supported in the specification.

Support for all of the claimed elements can be found in Fig. 1-3. Referring to Fig. 2, reference number 206 shows the SAN. Nevertheless, the specification has been amended to explicitly describe the function of the SAN. For example, page 13 of the specification has been amended to recite "The disk controller 211 sends success/failure information indicating whether or not the data has been transferred successfully, as well as the block number that is information related to the data, to a file management unit 209 in a server 207 via the SAN 206." Thus, the specification, as amended, provides support for this feature of claim 1.

The Office Action states that it is unclear how communication could occur over the SAN if the system is designed to function after a failure in the SAN, as described on page 13. Referring to page 13, line 19 of the specification, the word "one" may be logically contradictory because a failure in the SAN 206 may lead to system failure. The specification has been amended to change "one" to "a path" as stated in the corresponding Japanese priority document. Specifically, the specification now recites "If this response is not received within a predetermined time after data is sent, the disk controller 211 judges that the data transfer has failed because a failure occurred in a path of the SAN 206, SAN 226, and WAN-B." Furthermore, a failure due to WAN-B in Fig. 2 is described on page 14, lines 16-17. Thus, the specification, as amended, accurately describes the function of the SAN.

The Office Action additionally states that the limitation in claim 1 "wherein the SAN couples the first controller and the second controller to establish a... path for the transfer using the file transfer protocol with the LAN" is not supported in the specification. Referring to Fig. 3, reference number 306 shows the SAN. In addition, page 14 of the specification has been amended to recite "The file is read from a volume 312 via a disk controller 311 of a storage system 310 and is sent to a network LAN 301 via a SAN 306 and network interfaces 302 and 303." Thus, the specification, as amended, provides support for this feature of claim 1.

The Office Action states that Fig. 3 does not accurately show that information identifying a particular block occurs over the SAN, and that the SAN couples the first controller and the second controller to establish a path for transfer using a file transfer protocol. Specifically, the Office Action states that the arrows in the figure terminate at each point in the transfer of data. However, no arrow terminates at SAN 306.

Applicant has amended Fig. 3 to show that information identifying a particular block occurs over the SAN, and that the SAN couples the first controller and the second controller to establish a path for transfer using a file transfer protocol. Specifically, arrows have been added to indicate data transfer from disk controller 311 of storage system 310 to network interface 303 of storage system 310 to SAN 306 to network interface 303 of server 307 and to file transfer unit 308 of server 307. Arrows have also been added to indicate data transfer from file transfer unit 328 of backup server 327 to network interface 323 of backup server 327 to SAN 326 to network interface 323 of backup storage system 318 and to disk controller 331 of backup storage system 318. Thus, amended Fig. 3 accurately describes the features of claim 1.

The rejection of claims 3-8, 10-14 and 16 are also overcome by the above described amendments to the specification and the drawings with reference to claim 1. Thus, withdrawal of the rejection of claims 1, 3-8, 10-14 and 16 under 35 U.S.C. §112 is respectfully requested.

Claim Rejections Under 35 U.S.C. §103

The Office Action rejected claims 1, 6, 10, 14, and 16 under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2002/0083120 to *Soltis* in view of U.S. Publication No. 2003/0097607 to *Bessire*. Without conceding the merits of the rejection, Applicant respectfully submits that the amended claims overcome this rejection.

Claim 1, as amended, recites a "computer system for transferring data from a first storage unit to a second storage unit via a network." The computer system includes "a first controller provided in the first storage unit, which transfers data stored in said first storage unit, to said second storage unit using a block transfer protocol; a storage area network (SAN) through which the transfer of data using the block transfer protocol is performed to said second storage

unit; a table which associates a file composed of a plurality of blocks of data with blocks of data constituting the file; and a second controller which, in response to information that identifies a particular block to be transferred from said first controller via the SAN, identifies a file corresponding to the particular block using said table and transfers the identified file to said second storage unit via a local area network (LAN) using a file transfer protocol." In one feature, "the first controller and the second controller are coupled via said SAN to establish a path for the transfer between said first storage unit and said second storage unit using the block transfer protocol and another path for the transfer using the file transfer protocol with the LAN." In another feature, "said table receives from said first controller information indicating whether the particular block has been transferred to said second storage unit successfully in units of data blocks."

In contrast, *Soltis* discloses a distributed file system that incorporates network attached storage and storage area networks. On a Nasan client, write requests are passed to a Nasan file system layer. The Nasan layer either forwards the write request to a client-side remote file system or services the request using a SAN write data path. (See paragraph [0147]).

Bessire discloses interprocess communication that is supported by most operating systems to enable communication between processes, i.e., executing programs, either within the same computer or on different computers connected through a network. (See paragraph [0030]) One of controllers 30 and 32 serves as a backup for the other. (See the Abstract, last four lines).

The Office Action states that *Soltis* does not show identifying a particular block via the SAN or that the SAN couples the first and second controller to establish the paths in the claimed invention. The Office Action further states that *Bessire* shows that a first controller and a second controller may communicate over a network (See paragraph [0030]), and *Soltis* shows a finite number of networks (LAN 104 and SAN 128).

However, *Bessire* does not disclose Applicant's configuration that a storage-side controller (111) communicates with a server-side controller (109) via a SAN (106) (See page 10, lines 15-18) with the SAN also serving as a path for transferring a data block to a backup storage

unit (130). The use of a SAN is advantageous to implement a data transfer method that is faster and more reliable than a general network (See page 2, lines 1-9).

Soltis does not disclose that a server (Applicant's 107; 207; 307) and a storage system (Applicant's 110; 210; 310) are connected to a SAN (Applicant's 106; 206; 306). *Soltis'* showing of a finite number of networks (LAN 104 and SAN 128) is a general example of backup or duplication networks. Therefore, the combination of *Soltis* and *Bessire* is not the same as the claimed invention because *Soltis* does not disclose a SAN-based system in communication between the storage-side controller and the server-side controller.

Neither *Soltis*, *Bessire* nor any of the other cited references, alone or in combination, teach all of the features recited in independent claim 1. Specifically, *Soltis* and *Bessire* do not disclose "a second controller which, in response to information that identifies a particular block to be transferred from said first controller via the SAN, identifies a file corresponding to the particular block using said table and transfers the identified file to said second storage unit via a local area network (LAN) using a file transfer protocol." *Soltis* and *Bessire* also do not disclose "the first controller and the second controller are coupled via said SAN to establish a path for the transfer between said first storage unit and said second storage unit using the block transfer protocol and another path for the transfer using the file transfer protocol with the LAN." *Soltis* and *Bessire* further do not disclose, "said table receives from said first controller information indicating whether the particular block has been transferred to said second storage unit successfully in units of data blocks." For at least this reason, claim 1 is allowable over the cited art.

Independent claims 6, 10 and 16, as amended, recite features that are similar to the features recited in amended claim 1. As discussed above with reference to claim 1, the cited art does not teach these features. Thus, claims 6, 10 and 16 are also allowable over the cited art for at least the same reasons, as well as on their own merits.

Claim 14 is dependent on claim 10. As discussed above, Claim 10 is allowable over the cited art. Thus, claim 14 is also patentable for the reasons discussed above with respect to claim 10, as well as on its own merits.

The Office Action rejected claims 3-5, 7, and 13 under 35 U.S.C. §103(a) as being unpatentable over *Soltis* and *Bessire* in view of U.S. Patent No. 7,134,040 issued to *Ayres*. The Office Action rejected claim 8 under 35 U.S.C. §103(a) as being unpatentable over *Soltis*, *Bessire* and *Ayres* in view of U.S. Publication No. 2004/0098637 to *Duncan*. The Office Action rejected claims 11 and 12 under 35 U.S.C. §103(a) as being unpatentable over *Soltis* and *Bessire* in view of U.S. Patent No. 5,948,062 issued to *Tzelnic*. Without conceding the merits of the rejection, Applicant respectfully submits that the amended claims overcome these rejections.

Claims 3-5 depend from claim 1, claims 7 and 8 depend from claim 6, and claims 11-13 depend from claim 10, either directly or indirectly. The rejection of claims 3-5, 7, 8 and 11-13 is premised on the assertion that *Soltis* and *Bessire* disclose the features recited in claims 1, 6 and 10, and that at least one of *Ayres*, *Duncan* and *Tzelnic* disclose the remaining features of claims 3-5, 7, 8 and 11-13.

As discussed above, however, *Soltis* and *Bessire* do not disclose or suggest all features recited in claims 1, 6 and 10. As best understood, *Ayres*, *Duncan* and *Tzelnic* do not provide any teaching or suggestion that would remedy this deficiency. Therefore, the rejection is based on a flawed premise and cannot be maintained. Thus, claims 3-5, 7, 8 and 11-13 are patentable for the reasons discussed above with respect to claims 1, 6 and 10, as well as on their own merits.

Accordingly, Applicant respectfully requests withdrawal of the rejection of claims 1, 3-8, 10-14 and 16 under 35 U.S.C. 103(a).

CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this application are in condition for allowance and an action to that end is respectfully requested.

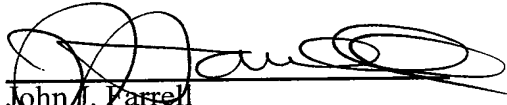
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If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

Date: 12/14/07


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